

What is claimed is:

1. An electronic component mounting method for mounting an electronic component comprising the steps of:

detecting a printing position of a solder paste on a circuit board on which a land is formed and the solder
5 paste is printed, and

mounting the electronic component on the circuit board by referring to the printing position of the solder paste as a reference.

2. The electronic component mounting method according to claim 1, further comprising the step of:

feed-forward controlling a detected result of the printing position of the solder paste from the step of
5 detecting to the step of mounting,

wherein the detected result is an output at the step of detecting.

3. The electronic component mounting method according to claim 1, further comprising the step of

individually setting a target mounting position of each electronic component based on a shift amount between a
5 position of the land corresponding to the electronic component to be mounted and the printing position of the

solder paste for the land.

4. The electronic component mounting method according to claim 1, further comprising the steps of:

obtaining a shift amount between position of the land corresponding to the electronic component to be mounted and the printing positions of the solder paste for each of the electronic components to be mounted on the circuit board,

calculating an added average value of the shift amounts thus obtained, and

collectively setting a target mounting position of each of said electronic components based on the added average value thus calculated.

5. The electronic component mounting method according to claim 1, further comprising the steps of:

dividing the circuit board into a plurality of blocks,

obtaining a shift amount between a position of the land corresponding to the electronic component to be mounted in each block and the printing position of the solder paste for the land, and

setting a target mounting position of the

10 electronic component for each block based on the shift amount thus obtained.

6. The electronic component mounting method according to claim 5,

wherein the blocks are obtained by an annular division from a peripheral edge of the circuit board toward a center.

7. The electronic component mounting method according to claim 5,

wherein the blocks are obtained by dividing the circuit board like a lattice.

8. The electronic component mounting method according to claim 1, further comprising the steps of:

deciding a self-alignment effect from a shift state between a position of a land corresponding to the electronic component to be mounted and the printing position of the solder paste for the land,

setting a target mounting position of the electronic component by using the printing position of the solder paste as a reference in a case that the self-

10 alignment effect is great, and

setting the target mounting position by using the position of the land as the reference in a case that the self-alignment effect is small.

9. The electronic component mounting method according to claim 1, further comprising the steps of:

setting a correction value at an optional rate for a shift amount between a position of a land corresponding
5 to the electronic component to be mounted and the printing position of the solder paste for the land; and

changing a target mounting position of the electronic component from the position of the land toward the printing position of the solder paste based on the
10 correction value thus set.

10. The electronic component mounting method according to claim 9,

wherein the correction value is set based on a degree of the self-alignment effect which is determined
5 depending on a shift state between the position of the land corresponding to an electronic component to be mounted and the printing position of the solder paste for the land.

11. The electronic component mounting method according to claim 9,

wherein the correction value is set depending on a characteristic of a solder paste to be used.

12. The electronic component mounting method according to claim 1,

wherein the step of mounting is not carried out in the case that the electronic component interferes with adjacent other electronic components on the circuit board.

13. The electronic component mounting method according to claim 1, further comprising the step of:

changing a target mounting position of the electronic component to be mounted toward the position of the land and from the printing position of the solder paste to a position in which the interference is not present in the case that the electronic component interferes with adjacent other electronic components on the circuit board.

14. The electronic component mounting method according to claim 1, further comprising the steps of:

obtaining a shift amount in a direction of rotation
and a shift amount in a horizontal direction in the case
5 that a shift amount of a position of the land corresponding
to the electronic component to be mounted from the printing
position of the solder paste for the land exceeds a
predetermined shift amount, and

setting a target mounting position and a target
10 rotating angle of the electronic component based on the
shift amounts in the horizontal direction and the direction
of rotation.

15. The electronic component mounting method according
to claim 1,

wherein the step of detecting includes the steps
of:

5 picking up an image of a circuit board having a
solder paste printed thereon;

reproducing a shape of a land hidden in the solder
paste by interpolating the picked-up image with referring
previously registered land data; and

10 obtaining a center of a position of the land from
the shape of the land thus reproduced.

16. An electronic component mounting apparatus for

mounting an electronic component comprising:

a mounting means for mounting the electronic component on the circuit board on which is formed a land and printed a solder paste by referring to a printing position of the solder paste as a reference.

17. The electronic component mounting apparatus according to Claim 16, further comprising:

a mounting data creating device for creating a data utilized for mounting the electronic component on the circuit board by the mounting means.

18. An electronic component mounting system for mounting an electronic component comprising:

a printing position detecting device for detecting a printing position of a solder paste on a circuit board on which a land is formed and the solder paste is printed, and

an electronic component mounting apparatus for mounting an electronic component on the circuit board by referring the detected printing position of said solder paste.

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19. The electronic component mounting system according

to claim 18, further comprising:

5 a solder paste printing apparatus for printing the solder paste on the circuit board by setting a position of the land as a target position.

20. The electronic component mounting system according to claim 19,

wherein said printing position detecting device is provided in the solder paste printing apparatus.

5 21. The electronic component mounting system according to claim 18,

wherein the printing position detecting device is provided in the electronic component mounting apparatus.

5 22. The electronic component mounting system according to Claim 18, further comprising:

a host computer connected to both of the printing position detecting device and the electronic component mounting apparatus through a communication line, and

wherein said host computer receives a detected printing position from the printing position detecting device and transmits a feed-forward signal to the

electronic component mounting apparatus.

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23. An electronic component mounting data creating method comprising the step of:

creating the mounting data by an electronic component mounting apparatus including a mounting means for mounting
s the electronic component on the circuit board on which is formed a land and printed a solder paste by referring to a printing position of the solder paste as a reference.

24. An electronic component mounting data creating method comprising the step of:

creating the mounting data by an external device connected to a electronic component mounting apparatus
5 including a mounting means for mounting the electronic component on the circuit board on which is formed a land and printed a solder paste by referring to a printing position of the solder paste as a reference, and

fetching said mounting data into the electronic
10 component mounting apparatus.

25. An electronic component mounting data creating method comprising the step of:

setting a correction amount collectively by referring types of the solder paste by using a table, and

5 wherein said correction amount is utilized for changing a target position for mounting an electronic component from a land position toward a solder paste printing position; and

10 wherein the table is previously registered a degree of a self-alignment effect according to each type of the solder paste.

26. An electronic component mounting data creating method comprising the step of:

5 setting a correction amount integrally according to types of the electronic component and solder paste by using a table, and

wherein the correction amount is utilized for changing a target position for mounting an electronic component from a land position toward a solder paste printing position;

10 wherein the table is previously registered a degree of a self-alignment effect according to each type of combination of the electronic component and the solder paste.

27. A mounting data creating device for creating mounting data for mounting an electronic component on a circuit board on which a land is formed and a solder paste is printed,

5 wherein said mounting data creating device is provided separately from an electronic component mounting apparatus, and

10 wherein the mounting data are obtained by detecting a printing position of the solder paste on the circuit board so that said electronic component mounting apparatus mounts the electronic component on the circuit board with referring to the printing position of the solder paste as a reference.

28. A program for mounting an electronic component on a circuit board comprising:

5 a mounting data recorded in the program and supplied to an electronic component mounting apparatus including a mounting means for mounting the electronic component on the circuit board on which a land is formed and a solder paste is printed by referring to a printing position of the solder paste as a reference.

29 The electronic component mounting system according

to Claim 19, further comprising:

an inspecting apparatus for inspecting states of
said printed solder paste and said land formed on said
5 circuit board.

30 The electronic component mounting system according
to Claim 29,

wherein said printing position detecting device is
provided in said inspecting apparatus.

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